When a Seatbelt Isn’t Enough – MVCs: Tourniquets and Hemorrhage Control

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Tourniquets and Survival

- 499 Patients / 862 Tourniquets /651 Limbs

Prehospital TK Placement	Shock Absent	Shock Present
Survival	90%	20%

	Current	Vietnam
Isolated Limb Prehospital Death Rate	2%	9%

Kragh, J. J of EM 2011.

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Tourniquet Outcomes

- OK if inappropriately placed
  - 2+ hour “ischemic” time
- Israeli studies – 0% mortality
- Early use – before shock
  - Before extrication / movement

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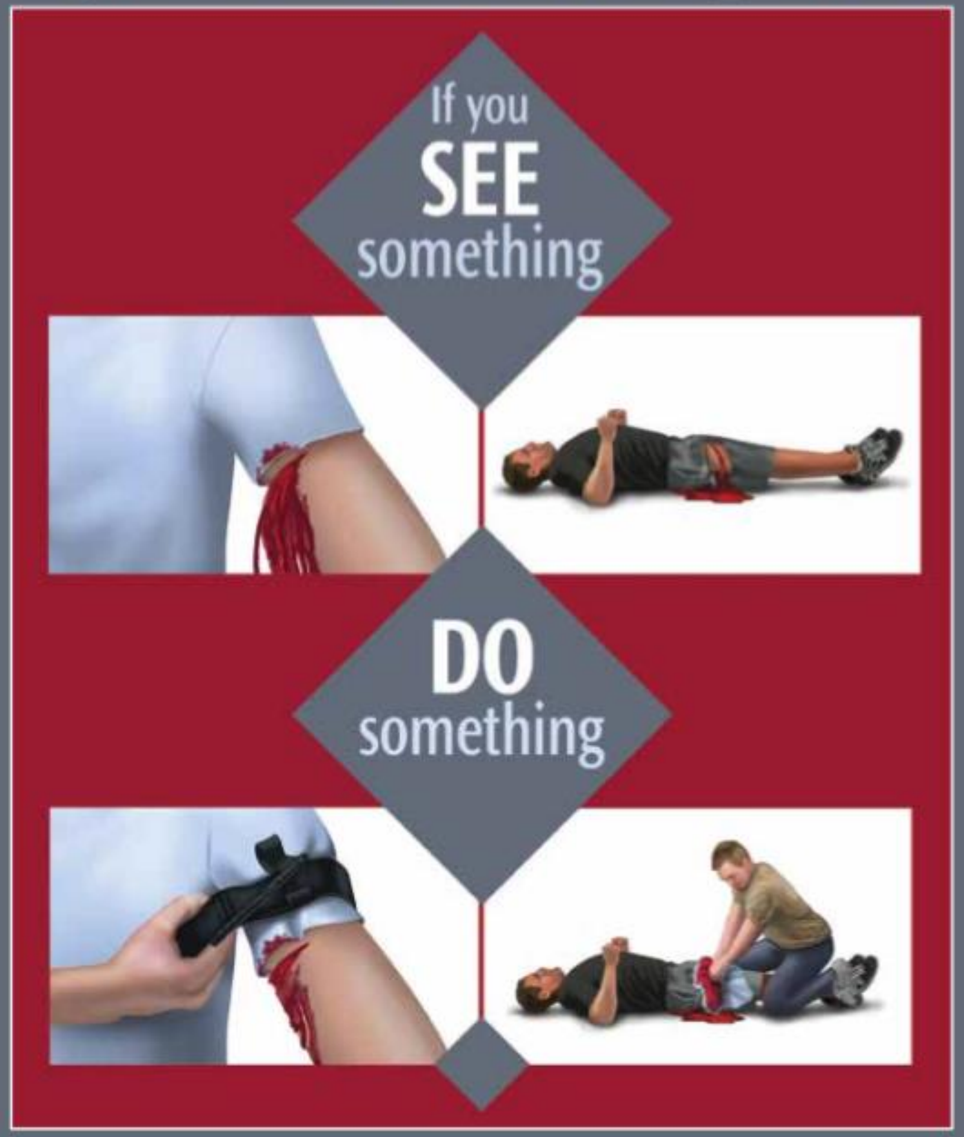
The Hartford Consensus III: Implementation of Bleeding Control



by Lenworth M. Jacobs, Jr., MD, MPH, FACS,

and the Joint Committee to Create a National Policy to Enhance Survivability from Intentional Mass-Casualty and Active Shooter Events

Traditional Roles

Hot	Danger	Law Enforcement
Warm	Not Secure	Rescue?
Cold	Safe	Fire/EMS

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THREAT

Threat Suppression

Rapid Extrication

Assessment/Triage

Transport

Law Enforcement

RTF

Fire/EMS

HARTFORD CONSENSUS
THREAT
IMPROVING SURVIVAL

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Rollover Car Crash Almost Costs Driver his Life, Limb

Pa. Fire Rescue paramedics save man's life with tourniquet

Fri, Sep 7, 2012 | By Travis Polk, MD

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Daily Mail .com

Teacher, 36, saves sister's life with a pedestrian's belt after leg was shattered in horror car crash

- Laura Reddy, 23, suffered extensive blood loss after being hit by a car while walking home from work in Devon
- Her sister Nadine Marchant, 36 - who was with her at the time- used a passing pedestrian's belt to stem the bleeding until help arrived
- Doctors said Ms Reddy would have bled to death without her sister's intervention

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Community

Trooper Applies Tourniquet at Crash Scene; Stops Man from Bleeding

Trooper Applies Tourniquet at Crash Scene; Stops Man from Bleeding

Indianapolis, IN- Trooper David Ploog had already worked four hours of overtime on Friday night, arrested one person for drug possession and was at the Indianapolis Post submitting the evidence when the call was dispatched at 12:42 a.m. Saturday morning. Serious personal injury crash on I-465 NB at the 37 mm. (approximately four miles west of SR 431) Ploog was on his way.

"When I arrived I saw several cars were involved and a crowd of people across the guard rail" said Ploog. "I went to the crowd and found a man bleeding heavily from a lower leg wound and I knew immediately that it would have to be stopped or he could bleed to death rather quickly".

Four Primary Principles

- Ensure your own safety
- Identify the injury
- Stop the bleeding
- Keep the victim warm

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Identify the Injury

- Location of wound:
  - Remove or cut victim’s clothing to expose the wound
- Type of bleeding:
  - Arterial
  - Venous
  - Capillary

Bleeding From Capillaries

- Small blood vessels that connect arteries to veins
- Bleeding is:
  - Dark red
  - Oozing from the injury site

Venous Bleeding

- Blood is:
  - Dark red in color
  - Flows steadily from a wound
- May be life threatening if a large vein is damaged

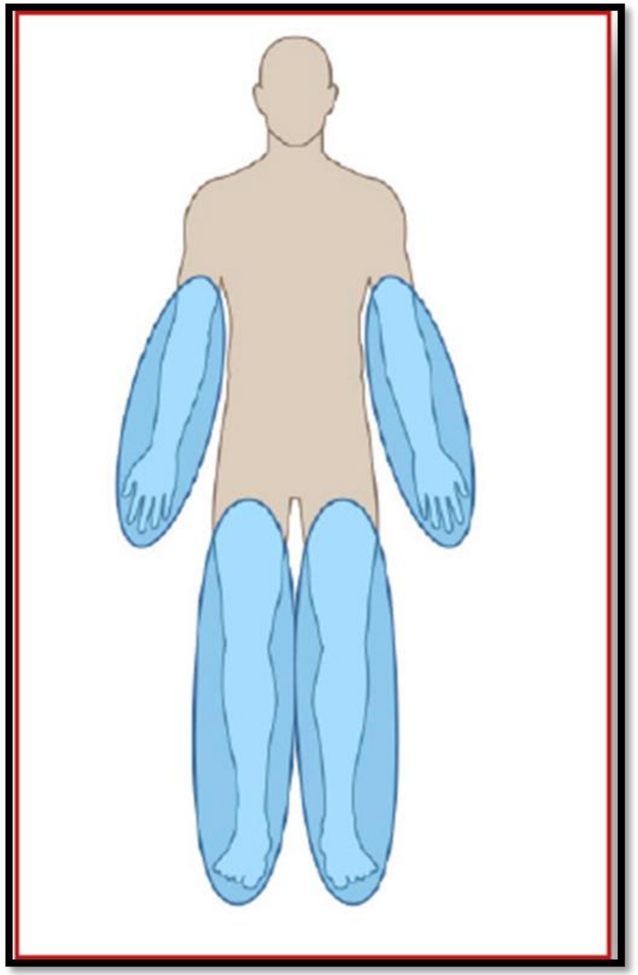
Arterial Bleeding

- Arterial Blood:
  - Bright red
  - “Spurts” or “Pumps” from the wound
- Life-threatening emergency!

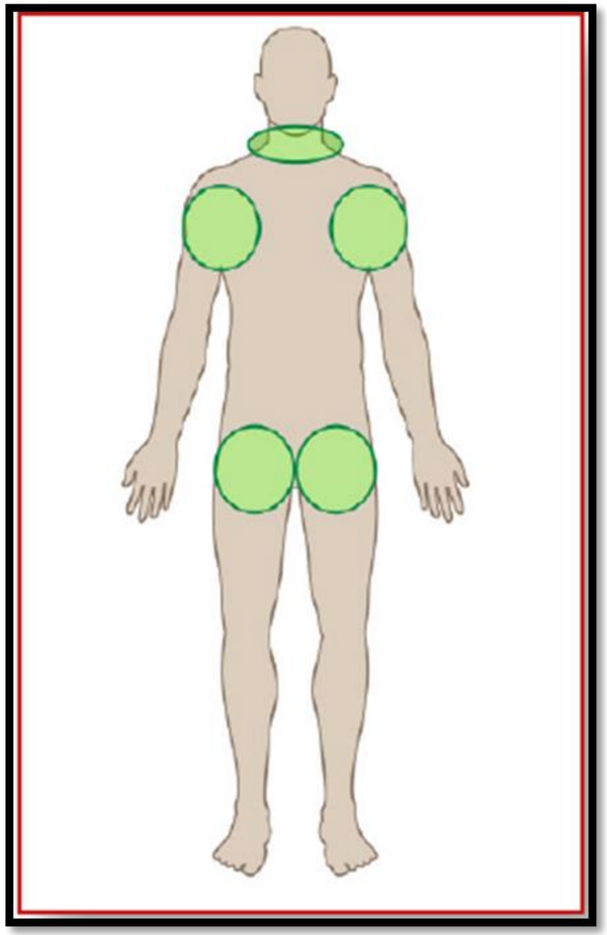
Arterial Bleeding

Extremity Bleeding

- Direct Pressure
- Tourniquet use



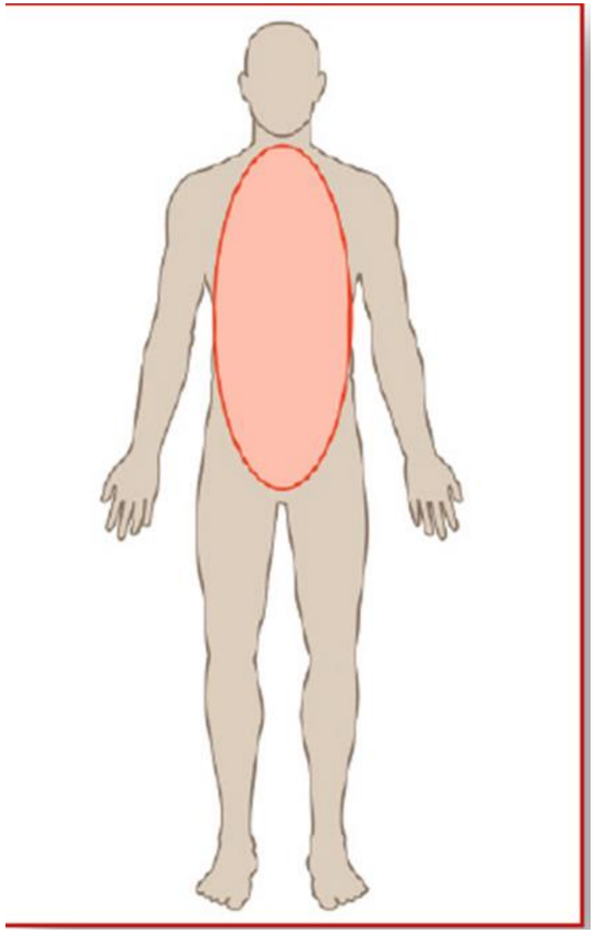
Junctional Bleeding



- Areas of concern are:
  - Neck
  - Shoulder
  - Groin
- Bleeding can be controlled by direct pressure and/or wound packing.

Internal Bleeding

- Injuries to the chest and abdomen may cause bleeding inside the body.
- These injuries cannot be managed outside the hospital.
- It’s important to recognize these wounds and call 9-1-1 immediately.



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Stop the Bleeding

- Death from arterial wound in < 3 minutes
- Extremity bleeding is the most frequent ***preventable*** cause of death from injury
- Immediate Action!

Basics of Shock

Shock

- Shock is not always obvious
- Patients may compensate
- Signs of shock at 15-30% blood volume loss

Signs of Shock

- Sweating
- Shivering
- Confusion
- Pale skin
- Cool/clammy skin
- Nausea
- Lack of energy
- Drowsy
- Unconsciousness

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If Signs of Shock Present:

- Don’t see bleeding? May have internal bleeding -- definitive treatment is the operating room
- Extremity injury with active bleeding – **use a tourniquet!**

Call 911 to get them to a Trauma Center ASAP!

Tourniquet Use

Hemorrhage Control

- Apply direct pressure to the site of the injury.
  - Note: direct pressure to a significant bleed will not work.
- Pack the wound
- Apply **TOURNIQUET!**

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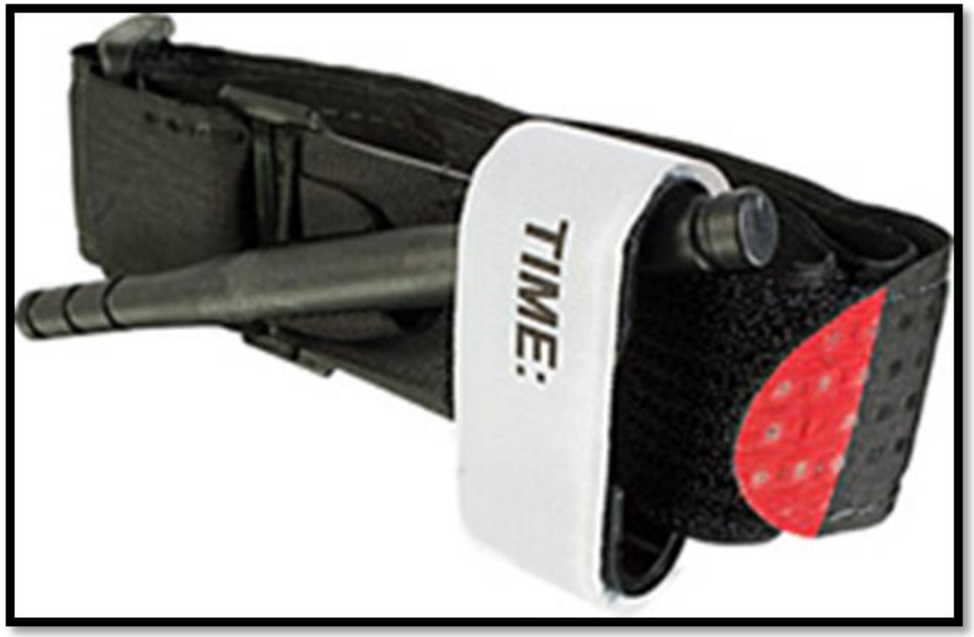
CAT Tourniquet

Indications for Tourniquet Use

- Massive extremity bleeding, uncontrolled by indirect or direct pressure.
- Extremity amputation.



Tourniquet Application

1. The tourniquet should be applied above the bleeding wound.

2. The tourniquet should be applied tight enough to stop the bleeding.

3. If one tourniquet does not stop the bleeding, another tourniquet should be placed above the first.

Tourniquet Application

- Once the bleeding has stopped, secure the tourniquet.
- Do not cover the tourniquet once it has been applied.

NEVER RELEASE THE TOURNIQUET!


C-A-Tourniquet
Arm Application

Blood and Body Fluid Exposure

- Know the source
  - Name
  - History
- Ryan White Act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